

REMARKS

This Amendment is in response to the Office Action dated July 2, 2003 in which, claims 1-4, 9, 11, 12, 15-20 and 25 were rejected and claims 5-8, 10, 13, 14, 21-24 and 26 were objected to. With this Amendment, claims 1, 7, 11-17, and 23 are amended and the remaining claims are unchanged. Applicants respectfully request reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks.

I. DRAWING REJECTIONS

On page 2 of the Office Action, the drawings were objected to because Figure 2, which only illustrates that which is old, does not include a legend such as --Prior Art-. Applicants have thus included a new Figure 2 that includes the legend --Prior Art--. Therefore, Applicants submit that the drawings are now in proper form.

II. CLAIM OBJECTIONS

On page 2 of the Office Action, claims 7 and 23 were objected to because of informalities. In accordance with the Examiner's suggested corrections, claims 7 and 23 have been amended to eliminate the errors.

III. CLAIM REJECTIONS

On page 3 of the Office Action, the Examiner rejected claims 1-3, 9, 11, 12, 15-19 and 25 under 35 U.S.C. §103(a) as being unpatentable over Applicants' admitted prior art (Figure 2) in view of Ottensen et al., U.S. Patent No. 6,417,982. Further, on page 4 of the Office Action, the Examiner rejected claims 4 and 20 under 35 U.S.C. §103(a) as being unpatentable over Applicant's admitted prior art (Figure 2) and Ottensen et al. as applied to claims 1-3, 9, 11, 12, 15-19 and 25 above, and further in view of Sidman et al., U.S. Patent No. 5,155,422.

Amended claim 1, which more particularly defines the invention, includes "a real-time adaptive loop shaping circuit configured to detect vibration energy in a position error signal

in real-time, and to responsively adjust, in real-time, at least one parameter of a transfer function of the vibration damping circuit to reduce vibrations at different frequencies.” On page 2 of the Office Action, the Examiner suggests that elements 120, 122 and 128 of Ottesen reduce vibrations in signals that drive the actuator in a manner similar to the “real-time adaptive loop shaping circuit” of claim 1. However, these elements of Ottesen do not operate in “real-time” to reduce vibrations in signals that drive the actuator. Evidence showing that elements 120, 122 and 128 do not operate in real-time can be found in FIG. 6A of Ottesen. The flow chart of FIG. 6A requires deactivation of all notch filters (step 202) and a reduction of the spindle velocity (step 210) for elements 120, 122 and 128 to carry out necessary computations for vibration detection and reduction. New coefficients, produced as a result of these computations, are incorporated in the notch filters before they are subsequently re-activated for normal operation. Clearly, the deactivation of all vibration filtering elements (notch filters) and the reduction of the spindle velocity cannot be carried out in “real-time” during normal operation of the disc drive. Therefore, the teachings of Ottesen are in contrast with the above limitations of claim 1. Thus, Applicants respectfully assert that independent claim 1 is patentably distinct and non-obvious over the prior art.

Independent claim 11 has elements similar to that of independent claim 1. Thus, for the same reasons as independent claim 1, Applicants submit that independent claim 11 is allowable as well.

Claim 16 is written-in “means-plus-function” form and includes “a real-time adaptive loop shaping means for attenuating disturbances in the servo loop.” In examining a means-plus-function claim, it is believed that the Supplemental Examination Guidelines for Determining the Applicability of 35 U.S.C. § 112,

Paragraph 6, which were set forth in the Federal Register on June 21, 2000 (Vol. 65, No. 120) are applicable. (See also In re Donaldson Co., 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994) and IMS Technology, Inc. v. Haas Automation, Inc., 54 U.S.P.Q.2d 1129 (Fed. Cir. 2000)). In Section II, paragraph 2 of the Guidelines, it is stated that, "If a claim limitation invokes 35 U.S.C. § 112, para 6, it must be interpreted to cover the corresponding structure, material or acts in the specification and 'equivalents thereof'".

In the present case, independent claim 16 recites a real-time adaptive loop shaping means for attenuating disturbances in the servo loop. Thus, according to the Guidelines, the structure (i.e., the real-time adaptive loop shaping means for attenuating disturbances in the servo loop) shall be construed as disclosed in Applicants' Specification. The corresponding structure can be found at FIG. 3 and includes a real-time adaptive loop shaping circuit 302 that detects vibration energy in a position error signal in real-time. In response to detecting the vibration energy, circuit 302 adjusts, in real-time, at least one parameter of a transfer, function of a vibration damping circuit 214 to reduce vibrations at different frequencies in a driving energy signal received by the vibration damping circuit 214.

As mentioned above, elements 120, 122 and 128 of Ottesen do not reduce vibrations in signals that drive the actuator in "real-time." This is in contrast with the real-time adaptive loop shaping circuit of the present invention. Therefore, properly interpreted means-plus-function claim 16 is believed to be patentably distinct and non-obvious over the prior art.

Applicants respectfully submit that the dependent claims are also allowable by virtue of their dependency, either directly or indirectly from the allowable independent claims.

Further, the dependent claims set forth numerous elements not shown or suggested in the prior art.

In view of the foregoing, Applicants respectfully request reconsideration and allowance of claims 1-26. Favorable action upon all claims is solicited.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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